



**PCT**

**NOTIFICATION OF THE RECORDING  
 OF A CHANGE**

(PCT Rule 92bis.1 and  
 Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

NORIN, Klas  
 Ericsson Radio Systems AB  
 Patent Unit Radio Access  
 S-164 80 Stockholm  
 SUÈDE

Date of mailing (day/month/year) 13 March 2001 (13.03.01)	<b>IMPORTANT NOTIFICATION</b>
Applicant's or agent's file reference P11514WO1	
International application No. PCT/SE00/01419	International filing date (day/month/year) 04 July 2000 (04.07.00)

1. The following indications appeared on record concerning:	
<input type="checkbox"/> the applicant	<input type="checkbox"/> the inventor
<input checked="" type="checkbox"/> the agent	<input type="checkbox"/> the common representative
Name and Address NORIN, Klas Ericsson Radio Systems AB Common Patent Department S-164 80 Stockholm Sweden	State of Nationality
	State of Residence
	Telephone No. 46 8 757 00 00
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2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:	
<input type="checkbox"/> the person	<input type="checkbox"/> the name
<input checked="" type="checkbox"/> the address	<input type="checkbox"/> the nationality
<input type="checkbox"/> the residence	
Name and Address NORIN, Klas Ericsson Radio Systems AB Patent Unit Radio Access S-164 80 Stockholm Sweden	State of Nationality
	State of Residence
	Telephone No. 46 8 757 00 00
	Facsimile No. 46 8 764 15 14
3. Further observations, if necessary: <b>The indication of a new address of the agent on the Demand (Form PCT/IPEA/401) has been considered a request for recording a change under Rule 92bis. In case of disagreement, the International Bureau should be notified immediately.</b>	
4. A copy of this notification has been sent to:	
<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer F. Baechler
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38



**Lier**  
**likningskontor og folkeregister**

MELAAEN GUNILLA  
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3400 LIER

**Bekreftelse på navneendring**

Fødselsnummer	Dato for navneendring
090468 16851	26.11.2001

Navn før navneendring	Slektsnavn <b>LARSSON</b>
	Fornavn <b>GUNILLA MARIA HELENA</b>
	Mellomnavn
Navn etter navneendring	Slektsnavn <b>MELAAEN</b>
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	Mellomnavn

Utstedt dato	Underskrift og stempel
26.11.2001	 Nina Albjerk
	

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P11514WO1	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/SE00/01419	International filing date (day/month/year) 04.07.2000	Priority date (day/month/year) 06.07.1999
International Patent Classification (IPC) or national classification and IPC <sub>7</sub> H04Q 7/36		
Applicant Telefonaktiebolaget LM Ericsson (publ) et al		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>6</u> sheets.</p>	
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>	

Date of submission of the demand 06.02.2001	Date of completion of this report 16.11.2001
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88	Authorized officer Thomas Tholin / MRo Telephone No. 08-782 25 00

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE00/01419

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
 pages 1-17, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement) under article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages 18-23, filed with the letter of 31.10.2001
- ☒ the drawings:  
 pages 1-13, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

### 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheet/fig \_\_\_\_\_

### 5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE00/01419

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims	<u>1-7</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-7</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-7</u>	YES
	Claims		NO

**2. Citations and explanations (Rule 70.7)**Documents considered to be relevant

D1: WO9851101  
D2: WO9853632  
D3: US5603085  
D4: US5513379  
D5: WO9835519

Document D1 shows a method for implementing channel changes from a current plan to a new predetermined plan in a cellular network comprising a plurality of cells. Each cell corresponding to at least one piece of equipment (18,26), to which a channel may be allocated for communicating signals to and from mobile end stations in the cell.

The method for implementing channel changes from a current plan comprises the steps of determining a sequence order for how the channels should be changed, investigating how the proposed change affects neighbouring cells; realising accepted changes in the plan.

The method in D1 differs from the invention according to claims 1-8 in that D1 doesn't explicitly mention a blocking of the selected equipment and other equipment that could disturb the selected equipment. Neither does D1 mention that the aforementioned procedure can be repeated for a new set of equipment. The object of D1 is to achieve a method for channel changes that validates from a frequency mode perspective. The object of the invention according to claims 1-7 is to achieve a method for implementing channel changes that validates from an equipment perspective (determining a sequence order for how the equipment should be changed).

... /...

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: V.

Documents D2-D5 only disclose the state of the art and are not commented on any further.

The invention according to claims 1-7 therefore fulfils the requirements of novelty, inventive step and industrial applicability.

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
11 January 2001 (11.01.2001)

PCT

(10) International Publication Number  
**WO 01/03458 A1**

(51) International Patent Classification<sup>7</sup>: **H04Q 7/36**

(21) International Application Number: **PCT/SE00/01419**

(22) International Filing Date: **4 July 2000 (04.07.2000)**

(25) Filing Language: **English**

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9902606-4 **6 July 1999 (06.07.1999) SE**

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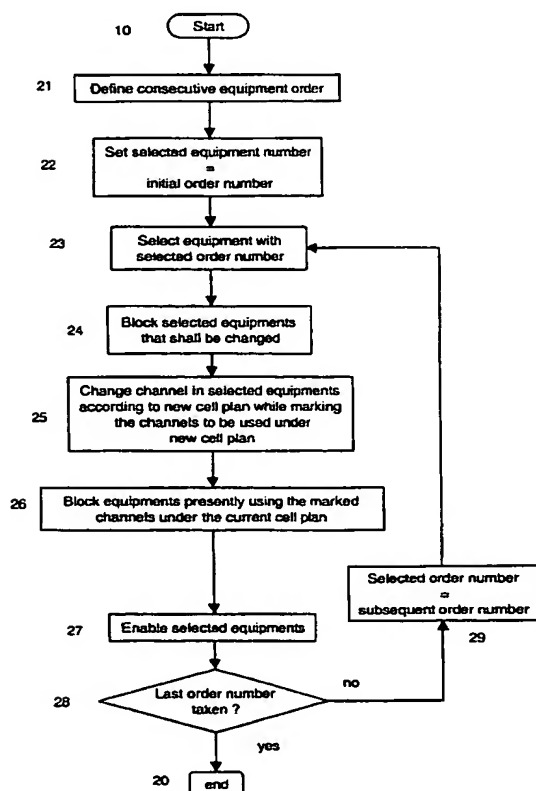
(74) Agent: **NORIN, Klas**; Ericsson Radio Systems AB, Common Patent Department, S-164 80 Stockholm (SE).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian

[Continued on next page]

(54) Title: **AUTOMATIC IMPLEMENTATION OF CHANNEL PLAN CHANGE IN CELLULAR NETWORK**



(57) Abstract: The invention concerns methods for automatically implementing channel changes from a current plan to a new predetermined plan in a cellular network comprising a plurality of cells, each cell corresponding to at least one equipment, to which a channel may be allocated for communicating signals to and from mobile end stations in the cell. The methods involve that the sequence for how the equipment should be changed is determined by an order number, relating to cell location, equipment number, present channel number or new channel number. The invention leads to an efficient implementation of given channel changes causing a minimum of disturbances.

WO 01/03458 A1





patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

— *Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.*

**Published:**

— *With international search report.*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 00/01419

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04Q 7/36

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9851101 A2 (TELEFONAKTIEBOLAGET LM ERICSSON (PUBL)), 12 November 1998 (12.11.98), page 3, line 18 - page 4, line 19, abstract	1
A	--	2-8
A	WO 9853632 A2 (TELEFONAKTIEBOLAGET LM ERICSSON (PUBL)), 26 November 1998 (26.11.98)	1-8
A	US 5603085 A (SHELDO, ALLAN), 11 February 1997 (11.02.97)	1-8
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☒ Further documents are listed in the continuation of Box C.
 ☒ See patent family annex.

\* Special categories of cited documents

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

Date of the actual completion of the international search

5 December 2000

Date of mailing of the international search report

07-12-2000

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 00/01419

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5513379 A (BENVENISTE, M., ET AL), 30 April 1996 (30.04.96)  --	1-8
A	WO 9835519 A2 (ERICSSON INC.), 13 August 1998 (13.08.98)  -- -----	1-8

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

02/11/00

International application No.  
PCT/SE 00/01419

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
WO	9851101	A2	12/11/98	AU	7460398 A	27/11/98
				BR	9809204 A	27/06/00
				CN	1262852 T	09/08/00
				DE	19882377 T	31/05/00
				GB	2341295 A	08/03/00
				GB	9926451 D	00/00/00
				US	6052593 A	18/04/00
WO	9853632	A2	26/11/98	AU	7558698 A	11/12/98
				BR	9809869 A	27/06/00
				CN	1257633 T	21/06/00
				DE	19882408 T	10/08/00
				US	5974320 A	26/10/99
US	5603085	A	11/02/97	CA	2176514 A	25/04/96
				EP	0737398 A	16/10/96
				FI	962345 A	06/06/96
				JP	9507372 T	22/07/97
				WO	9612369 A	25/04/96
US	5513379	A	30/04/96	CA	2147312 A	05/11/95
				CN	1116380 A	07/02/96
				EP	0684744 A	29/11/95
WO	9835519	A2	13/08/98	AU	6154798 A	26/08/98
				BR	9807215 A	23/05/00
				CN	1252205 T	03/05/00
				DE	19882098 T	16/12/99
				GB	2341515 A	15/03/00
				GB	9918757 D	00/00/00
				US	5974324 A	26/10/99

Patent claims

1. Method for implementing channel changes from a current plan to a new predetermined plan in a cellular network comprising a plurality of cells, each cell corresponding to at least one equipment, to which a channel may be allocated for communicating signals to and from mobile end stations in the cell;

each equipment in the network being adapted for receiving channel change information; blocking operation; performing a channel change according to the predetermined new channel plan and enabling operation; the method comprising the steps of

determining a sequence order for how the equipment or channels should be changed, the sequence possibly being random,

carrying out a subroutine in which

- selecting individual equipment or equipments according to the sequence order or according to which equipments are presently blocked,

- blocking the selected equipment, while blocking other equipment which could or would disturb the selected equipment, while effectuating the change of communication channels on the selected equipment,

- enabling the selected equipment,

- selecting a new equipment and repeating the above subroutine until all equipments which should change channel have been changed.

2. Method for implementing channel changes from a current plan to a new predetermined plan according to claim 1, whereby the method comprises the steps of

initially selecting at least one start cell in the cellular network;

defining a first group of cells (1) comprising only the start cell(s) (12),

blocking equipment that shall be changed in the first group of cells (13),

performing a sub-routine carrying out the following steps:

5       - identifying a second group of cells (2) not identified previously and having a cell border being adjacent the first group of cells (1, 14),

         - blocking equipment that shall be changed in the second group of cells (2, 15) while performing changes from the current cell plan to the new cell plan on equipment in the first group of cells (1, 16),  
10

         - enabling the first group of cells (1, 17),

         repeating this procedure with a new first group of cells being equal to the second group of cells (1:=2) until all cells have been changed (18, 19).  
15

3.       Method for implementing channel changes from a current plan to a new predetermined plan according to claim 1, whereby the method comprises the following steps  
20

         defining a consecutive *equipment* number order and selecting an initial order number (21);  
25

         setting a selected equipment number equal to the initial order number (22);

         performing a sub-routine wherein the following steps are carried out

30       - selecting equipment with selected order number;

         - blocking the equipment or equipments with the selected order number that shall be changed (24);

35       - changing channel in selected equipments according to the new cell plan while marking the channel or channels to be used under the new cell plan (25) while

blocking the equipments presently using the marked channels under the current cell plan (26);

- enabling selected equipment or equipments (27);

5

repeating the routine setting the selected order number equal with the subsequent order number (29) until no order numbers are left (28).

10

4. Method for implementing channel changes from a current plan to a new predetermined plan according to claim 1, comprising the steps of

defining a consecutive *channel* number order for the current cell plan and selecting an initial order number (31);

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setting a selected channel number equal to the initial order number (32);

performing a sub-routine wherein the following steps are carried out

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- selecting the equipment or equipments *having a channel* with the selected order number under the current cell plan (33);

- blocking selected equipment that shall be changed (34);

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- changing channel according to the new plan in selected equipments (35) while marking the channel or channels changed to and blocking the equipments presently using the marked channels under the current cell plan (36);

30

- enabling selected equipments (37);

repeating the routine setting the selected order number equal with the subsequent order number (39) until no order numbers are left (38).

35

5. Method for implementing channel changes from a current plan to a new predetermined plan according to claim 1, comprising the steps of

5 defining a consecutive *channel* number order for the new cell plan and defining an initial order number (31b);

setting a selected channel number equal to the initial order number (32);

10 performing a sub-routine wherein the following steps are carried out

- selecting the equipment or equipments *getting a channel* with the selected order number under the *new* cell plan (33b);

15 - blocking selected equipment that shall be changed (34);

- changing channel according to the new plan in selected equipments (35) while marking the channel or channels changed to and blocking the equipments presently using the marked channels under the current cell plan (36);

20 - enabling selected equipments (37);

repeating the routine setting the selected order number equal with the subsequent order number (39) until no order numbers are left (38).

- 25 6. Method for implementing channel changes from a current plan to a new predetermined plan according to claim 1, comprising the steps of

30 selecting a start equipment or channel (41, 42)

performing a sub-routine wherein the following steps are carried out

- blocking selected equipment that shall be changed (43),



- changing channel in selected equipments according to new cell plan, while marking the channel or channels changed to and blocking the equipments presently using the marked channels under the current cell plan (44, 45),

5       - enabling selected equipments (46),

repeating, until all channels have been changed, the above subroutine on an equipment that is presently blocked; and if no equipments are blocked then selecting another equipment that shall be changed (47, 48).

10

7.    Method for implementing channel changes from a current to a new cell plan and being adapted to be carried out prior to or in combination with the methods according to any preceding claim, wherein the following steps are carried out:

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defining an initial group of equipments comprising equipments that shall not be changed and equipments that shall be changed to a channel which is not used under the current cell plan (111);

20

blocking equipments that shall be changed in initial group (112);

performing channel changes on equipment in initial group (113);

enabling equipments in initial group of equipments (114); and

25

excluding equipments from initial group from being processed further (115).

30

8.    Method for implementing channel changes from a current to a new cell plan according to any previous claim, involving that at least two of the methods according to any of the above claims are carried out for testing purposes, whereby the results appearing from the comparative tests are used to determine which channel plan change according to the respective methods should be used to implement the given channel plan change.